UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,773	12/08/2000	Hidetoshi Kondo	MA-456-US	1175

21254 7590 11/30/2005

MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER	
CHANG, JUNGWON	
ART UNIT	**PAPER NUMBER**
2154	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/731,773	KONDO, HIDETOSHI	
	Examiner	Art Unit	
	Jungwon Chang	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☒ Claim(s) *17-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Action is in response to RCE filed on 9/6/2005. Claims 1-20 are presented for examination.

2. The objection to Claims 1, 2, 6, 7, 12 and 13 are hereby withdrawn in view of the amendment filed on 8/3/2005.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-10 and 12-16 are** rejected under 35 U.S.C. 103(a) as being obvious over Carpenter et al, (US 6,067,603), in view of Hassoun et al. (US 5,737,757), hereinafter Hassoun.

5. Carpenter was cited by the Examiner in a previous Office Action.

6. As for claim 1, Carpenter discloses the invention substantially as claimed, including a data access method used in a network system having several node devices connected for communications configured so that each node device can execute certain

processing by accessing memories in said several node devices or cache memories at a higher access speed (Fig. 1), said method comprising:

in each node device (processing nodes 10a-10d, Fig. 1):

executing a speculative access to said memories in the system while reading out, from a tag memory, a tag information as information related to a data storage status in said cache memories provided in the system (col. 7, line 47 – col. 8, line 51), and

deciding whether or not to abolish the data acquired from said memories by said speculative access according to said tag information read out (col. 8, line 42-51),

wherein said tag information indicates a data storage status comprising one of three possible states, including:

1) data is not found in any of said nodes (Table VI, status invalid); and

2) data is found in more than one of said node devices (col. 7, lines 47-55).

7. Carpenter discloses tag information indicates a data storage status (Table VI; col. 7, lines 47-55). However, Carpenter does not specifically disclose data is found in only one node device. Hassoun discloses data is found in only one node device (private status, i.e., the data is only available for use by that processor module; col. 2, lines 50-64; private line is one that is allowed to reside in the cache memory of only one processor module and to be used only by that processor module; col. 5, lines 8-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Carpenter and Hassoun because Hassound's

private status would allow only the particular processor to own the data without sharing it with other processors (Hassound, col. 2, lines 50-64; col. 5, lines 8-23).

8. As for claim 2, it is rejected for the same reasons set forth in claim 1 above. In addition, Carpenter discloses a data access method used in a network system having several node devices connected for mutual communications configured so that each node device can execute certain processing by reading out data from memories in said several node devices or cache memories at a higher access speed (Fig. 1), said method comprising

in each node device (processing nodes 10a-10d, Fig. 1):

executing a speculative readout of data from said memories in the node devices while reading out, from a tag memory, a tag information as information related to a data storage status in said cache memories provided in the system (col. 7, line 47 – col. 8, line 51),

judging whether a same data as a data subject to said speculative readout is in any of the cache memories based on said tag information read out (col. 7, line 47 – col. 8, line 29),

sending said speculative readout data to a processor in a self node device when the same data as the data subject to said speculative readout is not found in any of the cache memories (col. 8, line 31 – col. 11, line 44; Table VIII), and

acquiring, when the same data as the data subject to said speculative readout is

in one of the cache memories, such data in said cache memory and sending said data to the processor in the self node device (col. 8, lines 42-51; Table VIII),

wherein said tag information indicates a data storage status comprising one of three possible states, including:

1) data is not found in any of said nodes (Table VI, status invalid);

2) data is found in more than one of said node devices (col. 7, lines 47-55).

9. As for claim 3, Carpenter discloses a data access method used in a network system as set forth in claim 2 wherein

said speculative readout data is abolished when said data found in the cache memory is acquired and sent to the processor in the self node device (col. 8, line 31 – col. 11, line 44; Table VII).

10. As for claim 4, Carpenter discloses a data access method used in a network system as set forth in claim 2 wherein

each node device speculatively reads out the data from the memory in the self node device while reading out said tag information from the tag memory (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

11. As for claim 5, Carpenter discloses a data access method used in a network system as set forth in claim 2 wherein

each node device speculatively reads out the data from the memory in the other

node device while reading out said tag information from the tag memory (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

12. As for claims 6 and 7, it is rejected for the same reasons set forth in claim 1 above. In addition, Carpenter discloses a network system having several node devices connected by a communication mechanism for mutual communications configured so that each node device can execute certain processing by reading out data from memories in said several node devices or cache memories at a higher access speed (Fig. 1) wherein

each node device (processing nodes 10a-10d, Fig. 1) comprising

speculative readout means (TSU 42, Fig. 2) to execute the speculative readout of the data from said memories in the node devices while reading out, from the tag memory, the tag information as the information related to the data storage status in said cache memories provided in the system (col. 7, line 47 – col. 8, line 51),

a judgment means (coherency response logic 56, Fig. 2) to judge whether the same data as the data subject to said speculative readout is in any of the cache memories based on said tag information read out (col. 7, line 47 – col. 8, line 51; col. 9, line 59 – col. 10, line 42), and

a read data processing means (TRU 40, Fig. 2) which sends said speculative readout data to the processor in the self node device when the same data as the data subject to said speculative readout is judged not existing in any of the cache memories and, when the same data is judged existing in one of the cache memories, acquires

such data in said cache memory and sends said data to the processor in the self node device (col. 7, lines 1-24; col. 8, line 31 – col. 11, line 44; Tables VII and VIII).

13. As for claim 8, Carpenter discloses a network system as set forth in claim 7 wherein said data processing means abolishing said speculative readout data when said data found in the cache memory is acquired and sent to the processor in the self node device (col. 8, line 42-51; Table VII).

14. As for claim 9, Carpenter discloses a network system as set forth in claim 7 wherein said speculative readout means speculatively reads out the data from the memory in the self node device (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

15. As for claim 10, Carpenter discloses a network system as set forth in claim 7 wherein said speculative readout means speculatively reads out the data from the memory in the other node device (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

16. As for claim 12, it is rejected for the same reasons set forth in claim 1 above. In addition, Carpenter discloses a computer readable memory storing a data access program for controlling the data access in a network system having several node devices connected for mutual communications configured so that each node device can

execute certain processing by accessing memories in said several node devices or cache memories at a higher access speed (Fig. 1), said data access program executing:

speculative access processing for the memories in the system while reading out, from a tag memory, tag information as information related to a data storage status in said cache memories provided in the system (col. 7, line 47 – col. 8, line 51) and

processing to judge whether or not to abolish data acquired from said memories by said speculative access according to said tag information read out (col. 8, lines 42-51; Table VII),

wherein said tag information indicates a data storage status comprising one of three possible states, including:

1) data is not found in any of said nodes (Table VI, status invalid); and

2) data is found in more than one of said node devices (col. 7, lines 47-55).

17. As for claim 13, it is rejected for the same reasons set forth in claim 1 above. In addition, Carpenter discloses a computer readable memory storing a data access program for controlling the data access in a network system having several node devices connected for mutual communications configured so that each node device can execute certain processing by reading out data from memories in said several node devices or cache memories at a higher access speed (Fig. 1), said data access program executing:

speculative readout processing to read out data from said memories in the node

devices while reading out, from a tag memory, tag information as information related to a data storage status in said cache memories provided in the system (col. 7, line 47 – col. 8, line 51);

judgment processing to judge whether same data as data subject to said speculative readout is found in any of the cache memories based on said tag information read out (col. 8, lines 42-51; Table VII); and

processing when the same data as the data subject to said speculative readout is not found in any of the cache memories to send said speculative readout data to a processor in the self node device (col. 8, line 31 – col. 11, line 44; Tables VII and VIII); and,

processing, when the same data as the data subject to said speculative readout is found in one of the cache memories to acquire such data in said cache memory and send said data to the processor in the self node device (col. 8, line 31 – col. 11, line 44; Tables VII and VIII),

wherein said tag information indicates a data storage status comprising one of three possible states, including:

1) data is not found in any of said nodes (Table VI, status invalid); and

2) data is found in more than one of said node devices (col. 7, lines 47-55).

18. As for claim 14, Carpenter discloses a computer readable memory storing a data access program for controlling the data access in a network system as set forth in claim 13 wherein said data access program abolishes said speculative readout data when

acquiring the data in said cache memory and send such data to the processor in the self node device (col. 8, line 42-51; Table VII).

19. As for claim 15, Carpenter discloses a computer readable memory storing a data access program for controlling data access in a network system as set forth in claim 13 wherein said data access program speculatively reads out data from memories in the self node device while reading out said tag information from the tag memory (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

20. As for claim 16, Carpenter discloses a computer readable memory storing a data access program for controlling the data access in a network system as set forth in claim 13, wherein said data access program speculatively reads out data from memories in another node device while reading out said tag information from the tag memory (col. 7, line 47 – col. 8, line 51; see also col. 4, lines 6-27).

21. **Claim 11** is rejected under 35 U.S.C. 103(a) as being obvious over Carpenter, Hassoun, further in view of Jhang et al. (US 6,253,292 B1).

22. Jhang was cited by the Examiner in a previous Office Action.

23. As for claim 11, Carpenter and Hassoun do not specifically disclose providing a tag memory in the communication mechanism. Jhang teaches providing a tag memory

in a communication mechanism (remote cache 417-2, Fig. 4B; col. 5, lines 32-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Carpenter by providing a tag memory in the communication mechanism in order to facilitate data transfer between devices and maintain system coherency, as taught by Jhang (remote cache 417-2, Fig. 4B; col. 5, lines 32-48). The modification would further provide the additional advantage of reducing system memory requirements, improving system coherency, and improving the flexibility and efficiency of the system through the use of a single shared memory, as taught by Jhang (col. 1, lines 13-22).

24. Claims 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

25. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

VanDoren et al, patent 6,014,690, Deshpande et al, patent 6,591,348, Baumgartner et al, patent 6,546,429, Bannister et al, patent 6,192,452, Carpenter et al, patent

6,085,293 disclose non-uniform memory access data processing system in which a using cache tag information to accelerate memory references.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jungwon Chang whose telephone number is 571-272-3960. The examiner can normally be reached on 9:30-6:00 (Monday-Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jungwon Chang
November 23, 2005